

PROGRESS THROUGH PARTNERSHIP

4

HEALTH AND

LIFE SCIENCES

KEY *Points*

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INFORMATION SERVICE

17 JUL 1995

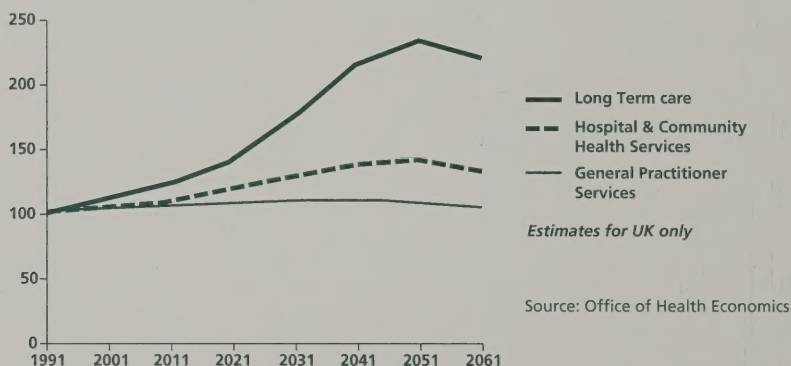
Wellcome Centre for Medical Science

THE SECTOR

The sector is based around health promotion and health care activities, along with the pharmaceutical, medical instrument and equipment industries that support them, and biotechnology and veterinary medicine to the extent that they share a common research base. Advances in the life sciences also present opportunities in other economic sectors such as agriculture, food, or materials, and the panel has taken a broad view of the opportunities in prioritising research areas.

THE FUTURE

The panel expects the ageing populations in the developed world, and the consequent increase in chronic disease and disability, to have a major impact on health care needs (see figure). Changes already under way in the organisation of health services and the structure of the pharmaceutical industry will determine how this demand is translated into innovation. At the same time progress in molecular genetics and the application of information technology to health care will offer expanding opportunities. Environmental pressure may drive innovation in biological production and animal health.



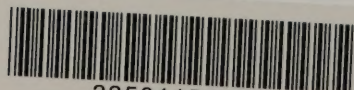
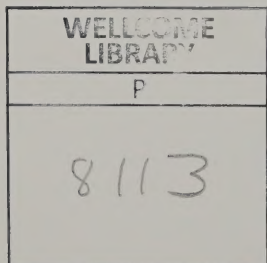
Resource implications of demographic change

KEY RECOMMENDATIONS

The Health and Life Sciences panel recommend greater effort and investment in:

- (i) Infrastructure for exploitation and development. Economic success in the expanding life sciences sector needs close links between industry, health services, and a strong research base in the life sciences and clinical medicine.
- (ii) "Integrative biology": research programmes which integrate molecular biology and genetics with cell and tissue biology, and whole organism studies.
- (iii) Neuroscience and the cognitive sciences. Research into progressive degenerative disease and non-specific, age-related decline.

TECHNOLOGY Foresight



- (iv) Ageing. Basic research into ageing and disabling degenerative disease, coupled with technologies for sustaining reasonable quality of life for the elderly infirm.
- (v) Genetics in risk evaluation and management. Understanding how genetic information can be applied to preventing and treating common multi-factorial diseases.
- (vi) Drug creation and delivery. Building the molecular, chemical, and biological expertise that will support new classes of therapeutic agents.
- (vii) Advanced recombinant technology. Research into key metabolic pathways, metabolic engineering, and applications in the biological manufacture of industrial products.
- (viii) Diagnostic applications of molecular biology. Applying research into disease at the genetic, molecular and cellular levels to develop new generations of diagnostics.
- (ix) "Immune manipulation". Research into the control of the immune system, and applications in specific interventions in inflammatory and immune disease, vaccines, transplants and other areas.
- (x) Medical information technology. Innovative ways of using information and communication systems to inform and support clinical decisions, and medical practice in general.

FORWARD WITH FORESIGHT

The panel's report includes detailed suggestions on how each recommendation might be implemented. The action needed is different in each area, but broadly speaking, four types of initiative are envisaged:

- (i) Strategic research programmes to develop basic knowledge underpinning specific areas of opportunity. These would involve focused, co-ordinated action by both public- and private- sector research groups.
- (ii) Basic research programmes to develop a broad and expansive knowledge base in major areas of long-term importance, involving public sector, and in some cases private sector researchers.
- (iii) Developing the infrastructure for life sciences research and exploitation by changing regulations, organisational structures, and resource allocation. Specific initiatives include:
 - improving the fiscal environment for new company formation and funding;
 - improving the interface between academic research and industry through career flexibility, training, and further development of university technology transfer groups;
 - modifying the Research Assessment Exercise to provide greater incentives for co-operative research programmes in the university sector;

- additional technology incubators;
- greater investment in the physical infrastructure for life sciences research in universities.

The panel also recommends changes in organisation and training to strengthen clinical research within the health services.

- (iv) Undergraduate and postgraduate training programmes to accelerate development of new cadres of researchers with the expertise to address emerging areas of long-term importance.

TECHNOLOGY FORESIGHT PROGRAMME

The purpose of the Technology Foresight Programme is to help business people, engineers and scientists become better informed about each other's efforts. It is bringing these communities together in networks - looking forward in partnership - which will help to identify emerging opportunities in markets and technologies. The Programme will also help to ensure that resources are used to best effect in support of wealth creation and improving the quality of life. The results of Foresight will inform decisions on spending by Government and industry. Foresight findings are available to small and medium sized enterprises which may not have the resources to undertake Foresight work on their own account.

The Technology Foresight Programme is co-ordinated by the Office of Science and Technology (part of the Cabinet Office). Foresight panels have been working in each of the following 15 sectors:

Agriculture, Natural Resources & Environment	Health & Life Sciences
Chemicals	IT/Electronics
Communications	Leisure & Learning
Construction	Manufacturing, Production & Business Processes
Defence & Aerospace	Materials
Energy	Retail & Distribution
Financial Services	Transport
Food & Drink	

Summary leaflets (like this one) are available for each sector. Copies of these documents are available from the Office of Science and Technology, Albany House, 84-86 Petty France, London, SW1H 9ST (Fax: 0171-271-2015). Full reports for each sector are available from Her Majesty's Stationery Office.